FINAL REPORT
JULY 2007

REPORT NO. 06-04E

EVALUATION TRANSPORTABILITY TESTING OF THE JOINT MODULAR INTERMODAL PLATFORM (JMIP) UNIT #4 TP-94-01, "TRANSPORTABILITY TESTING PROCEDURES"

Prepared for:

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DEFENSE AMMUNITION CENTER
VALIDATION ENGINEERING DIVISION
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EVALUATION TRANSPORTABILITY TESTING OF THE JOINT MODULAR INTERMODAL PLATFORM (JMIP) UNIT #4 TP-94-01, REV. 2, JUNE 2004, "TRANSPORTABILITY TESTING PROCEDURES"

ABSTRACT

The U.S. Army Defense Ammunition Center (DAC), Validation Engineering Division (SJMAC-DEV), was tasked by the Logistics Research and Engineering Directorate (AMSRD-AAR-AIL-F), Picatinny Arsenal, NJ to conduct Evaluation Transportability Testing on the Joint Modular Intermodal Platform (JMIP) Unit #4 manufactured by SEA BOX, Inc, East Riverton, NJ. The testing was conducted in accordance with TP-94-01, Revision 2, June 2004 "Transportability Testing Procedures." The test loads consisted of two-high stacks of Joint Modular Intermodal Containers (JMICs).

The objective of the testing was to identify the adequacy of the JMIP for demonstration use and not final approval when transportability tested in accordance with TP-94-01, Revision 2, June 2004.

The following observations resulted from the testing of JMIP Unit #4:

1. Inspection following completion of the Hazard Course revealed the JMIP rail on the driver's side front dropped down 0.38 inches.
2. The bottom plate on the JMIP rail was deforming and delaminating when contacting the Palletized Load System (PLS) roller.
3. Inspection following the completion of the Hazard Course revealed that the JMIP main rails were slanted and no longer centered in the channels.
4. Inspection following the completion of Hazard Course revealed that the JMIP main rail on the passenger side had moved back.

5. One (1) handle of the A-Frame PLS position transport pin partially opened. This was most likely caused by the locking nuts moving. The pin remained safely engaged.

6. The JMIP had to be craned onto the PLS trailer. The JMIP, as currently designed, cannot be rolled back on the PLS trailer using the vehicle load handling system due to the outward location of the rollers. The outward roller location prevents the JMIP from staying properly aligned when rolled back onto the PLS trailer. Additionally, the top JMICs had to be removed to prevent interference with the slings when loading/unloading the JMIP from the trailer.

7. Throughout testing the JMIP moved forward and aft on the PLS trailer due to the JMIP not properly engaging the trailer stops.

8. Following the completion of the testing, the JMIP was difficult to disengage from the PLS trailer. The JMIP had to be manipulated so that the trailer DIN locks would disengage the JMIP DIN locks.

9. One (1) JMIC locking pin on one (1) side panel had disengaged. The load was still safely secured and retained.

The JMIP, as tested, is adequate, to transport double-stacked Navy JMICs and to transport ammunition for demonstration purposes. The operational condition of the JMIP should be closely monitored during the demonstrations. Also, the Defense Ammunition Center, Transportation Engineering Division, shall be consulted for the ammunition and loading instructions.

The JMIP, as currently designed, is **not adequate**, to be used on the PLS trailer.

Prepared by:

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Reviewed by:

JERRY W. BEAVER
Chief, Validation Engineering Division

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VALIDATION ENGINEERING DIVISION
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Evaluation Transportability Testing of the Joint Modular Intermodal Platform (JMIP) Unit #4 TP-94-01, Revision 2, June 2004 "Transportability Testing Procedures"

TABLE OF CONTENTS

PART 1 – INTRODUCTION

A. BACKGROUND. The U.S. Army Defense Ammunition Center (DAC), Validation Engineering Division (SJMAC-DEV), was tasked by the Logistics Research and Engineering Directorate (AMSRD-AAR-AIL-F), Picatinny Arsenal, NJ to conduct Evaluation Transportability Testing on the Joint Modular Intermodal Platform (JMIP) Unit #4 manufactured by SEA BOX, Inc, East Riverton, NJ. The testing was conducted in accordance with TP-94-01, Revision 2, June 2004 "Transportability Testing Procedures." The test loads consisted of two-high stacks of Joint Modular Intermodal Containers (JMICs).

B. AUTHORITY. This test was conducted IAW mission responsibilities delegated by the U.S. Army Joint Munitions Command (JMC), Rock Island, IL. Reference is made to the following:

1. AR 740-1, 15 June 2001, Storage and Supply Activity Operation.

2. OSC-R, 10-23, Mission and Major Functions of U.S. Army Defense Ammunition Center (DAC) 21 Nov 2000.

C. OBJECTIVE. The objective of the testing was to identify the adequacy of the JMIP for demonstration use and not final approval when transportability tested in accordance with TP-94-01, Revision 2, June 2004.

D. OBSERVATIONS.

1. Inspection following completion of the Hazard Course revealed the JMIP rail on the driver's side front dropped down 0.38 inches.

2. The bottom plate on the JMIP rail was deforming and delaminating when contacting the Palletized Load System (PLS) roller.

3. Inspection following the completion of the Hazard Course revealed that the JMIP main rails were slanted and no longer centered in the channels.

4. Inspection following the completion of Hazard Course revealed that the JMIP main rail on the passenger side had moved back.

5. One (1) handle of the A-Frame PLS position transport pin partially opened. This was most likely caused by the locking nuts moving. The pin remained safely engaged.

6. The JMIP had to be craned onto the PLS trailer. The JMIP, as currently designed, cannot be rolled back on the PLS trailer using the vehicle load handling system due to the outward location of the rollers. The outward roller location prevents the JMIP from staying properly aligned when rolled back onto the PLS trailer. Additionally, the top JMICs had to be removed to prevent interference with the slings when loading/unloading the JMIP from the trailer.

7. Throughout testing the JMIP moved forward and aft on the PLS trailer due to the JMIP not properly engaging the trailer stops.

8. Following the completion of the testing, the JMIP was difficult to disengage from the PLS trailer. The JMIP had to be manipulated so that the trailer DIN locks would disengage the JMIP DIN locks.

9. One (1) JMIC locking pin on one (1) side panel had disengaged. The load was still safely secured and retained.

E. CONCLUSIONS. The JMIP, as tested, is adequate to transport double-stacked Navy JMICs and to transport ammunition for demonstration purposes. The operational condition of the JMIP should be closely monitored during the demonstrations. Also, the Defense Ammunition Center, Transportation Engineering Division, shall be consulted for the ammunition and loading instructions.

The JMIP, as currently designed, is **not adequate**, to be used on the PLS trailer.

PART 2 - ATTENDEES

ATTENDEE	MAILING ADDRESS
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PART 3 - TEST EQUIPMENT

1. Joint Modular Intermodal Platform Unit #4
   Manufactured by SEA BOX, Inc., East Riverton, NJ
   Model Number: J-MIP
   Serial Number: 00004
   Date of Manufacture: 26 January 2007
   Tare Weight: 4,240 lbs (without straps, rings and end gates)

2. Joint Modular Intermodal Container
   Designed by Naval PHST Center - Earle, NJ
   Length: 51-3/4 inches
   Width: 43-3/4 inches
   Height: 43 inches

3. Palletized Load System Truck
   Model #: M1074
   Manufactured by Oshkosh Truck Corporation, Oshkosh, WI
   ID #: 10T2P1NH6N1044011
   NSN: 2320-01-304-2277
   Serial #: 44011
   Curb Weight: 55,000 lbs

4. Truck, Tractor, MTV, M1088 A1
   ID #: J0229
   NSN: 2320 01 447 3893
   VSN: NL1FSC
   MFG Serial #: T-018488EFJM
   Weight: 19,340 lbs

5. Semitrailer, flatbed, breakbulk/container transporter, 34 ton
   Model #: M872A1
   Manufactured by Heller Truck Body Corporation, Hillsdale, NJ
   ID #: 11-1505 NX05NZ
   NSN: 2330 01 109 8006
   Weight: 19,240 lbs

8. Truck, 8 X 8, Cargo
   Model Number: M977
   Manufactured by Oshkosh Truck Corporation
   Serial Number: 10TZK1J2-2F1026025
   NSN 2320-01-097-0260
   GVWR: 62,000 lbs

9. Trailer, Palletized Load System
   Model Number: M1076
   Manufactured by Oshkosh Truck Corporation
   Serial Number: 42879
   NSN: 2330-01-303-5197
   Curb Weight: 16,500 lbs
   GVWR: 49,500 lbs

10. Railcar DODX 42353
    Manufactured by Thrall Car
    Length: 89 feet – 4 inches
    Empty Weight: 85,000 lbs.

PART 4 - TEST PROCEDURES

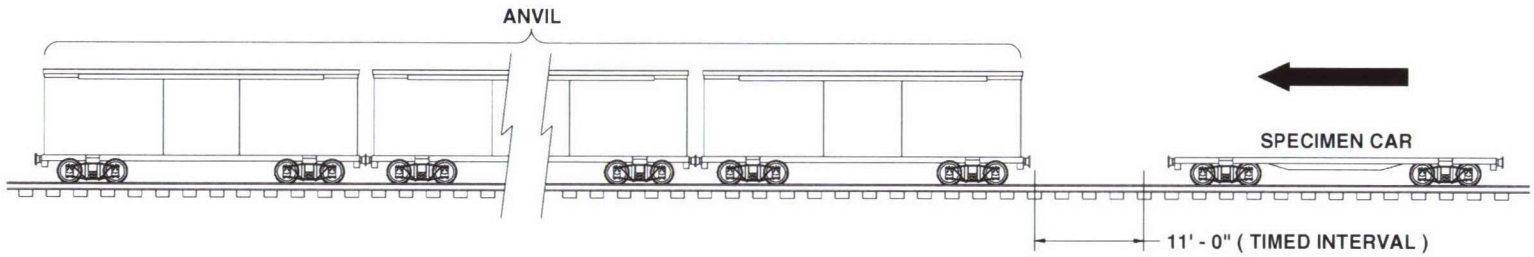
The test procedures outlined in this section were extracted from TP-94-01, "Transportability Testing Procedures," Revision 2, June 2004, for validating tactical vehicles and outloading procedures used for shipping munitions by tactical truck, railcar, and ocean-going vessel.

The rail impact will be conducted with the test load secured directly to the railcar. Inert (non-explosive) items were used to build the load. The test loads were prepared using the blocking and bracing procedures proposed for use with munitions (***see Part 6 – Drawings for procedures***). The weight and physical characteristics (weights, physical dimensions, center of gravity, etc.) of the test loads were similar to live (explosive) ammunition.

A. RAIL TEST. RAIL IMPACT TEST METHOD. The test load or vehicle will be secured to a flatcar. The equipment needed to perform the test will include the specimen (hammer) car, four empty railroad cars connected together to serve as the anvil, and a railroad locomotive. The anvil cars will be positioned on a level section of track with air and hand brakes set and with draft gears compressed. The locomotive unit will push the specimen car toward the anvil at a predetermined speed, then disconnect from the specimen car approximately 50 yards away from the anvil cars allowing the specimen car to roll freely along the track until it strikes the anvil. This will constitute an impact. Impacting will be accomplished at speeds of 4, 6, and 8.1 mph in one direction and at a speed of 8.1 mph in the reverse direction. The tolerance for the speeds is plus 0.5 mph, minus 0.5 mph for the 4 mph and 6 mph impacts, and plus 0.5 mph, minus 0 mph for the 8.1 mph impacts. The impact speeds will be determined by using an electronic counter to measure the time for the specimen car to traverse an 11-foot distance immediately prior to contact with the anvil cars (see Figure 1).

ASSOCIATION OF AMERICAN RAILROADS (AAR)

STANDARD TEST PLAN



4 BUFFER CARS (ANVIL)
WITH DRAFT GEAR
COMPRESSED AND AIR BRAKES IN A SET POSITION

ANVIL CAR TOTAL WT. 250,000 LBS (APPROX)

SPECIMEN CAR IS RELEASED BY SWITCH ENGINE TO
ATTAIN: IMPACT NO. 1 @ 4 MPH
IMPACT NO. 2 @ 6 MPH
IMPACT NO. 3 @ 8.1 MPH

THEN THE CAR IS REVERSED AND RELEASED BY SWITCH ENGINE TO ATTAIN:

IMPACT NO. 4 @ 8.1 MPH

Figure 1. Rail Impact Sketch

B. ON/OFF ROAD TEST.

1. HAZARD COURSE. The test load or vehicle will be transported over the 200-foot-long segment of concrete-paved road consisting of two series of railroad ties projecting 6 inches above the level of the road surface. The hazard course will be traversed two times (see Figure 2).

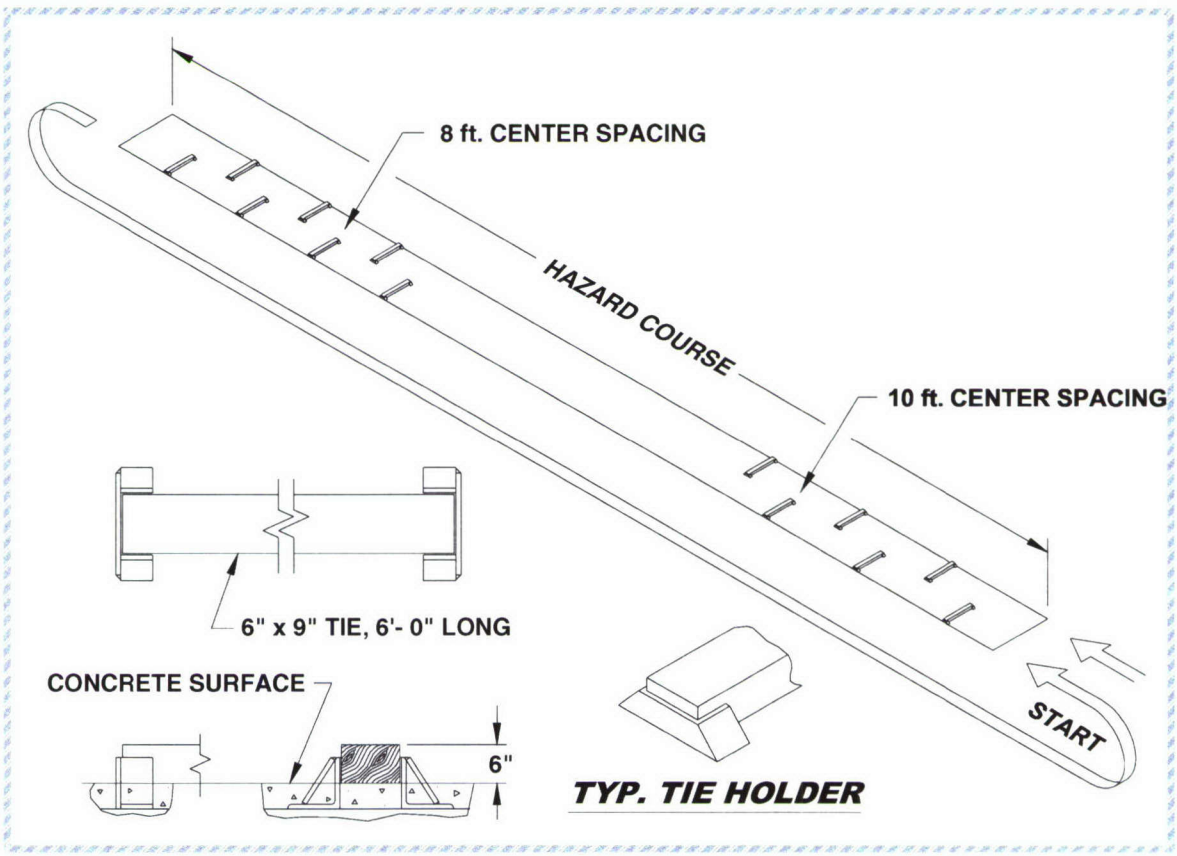


Figure 2. Hazard Course Sketch

a. The first series of 6 ties are spaced on 10-foot centers and alternately positioned on opposite sides of the road centerline for a distance of 50 feet.

b. Following the first series of ties, a paved roadway of 75 feet separates the first and second series of railroad ties.

c. The second series of 7 ties are spaced on 8-foot centers and alternately positioned on opposite sides of the road centerline for a distance of 48 feet.

d. The test load is driven across the hazard course at speeds that will produce the most violent vertical and side-to-side rolling reaction obtainable in traversing the hazard course (approximately 5 mph).

2. ROAD TRIP. The test load or vehicle will be transported for a distance of 30 miles over a combination of roads surfaced with gravel, concrete, and asphalt. The test route will include curves, corners, railroad crossings and stops and starts. The test load or vehicle will travel at the maximum speed for the particular road being traversed, except as limited by legal restrictions.

3. PANIC STOPS. During the road trip, the test load or vehicle will be subjected to three (3) full airbrake stops while traveling in the forward direction and one in the reverse direction while traveling down a 7 percent grade. The first three stops are at 5, 10, and 15 mph while the stop in the reverse direction is approximately 5 mph. This testing will not be required if the Rail Impact Test is performed.

4. WASHBOARD COURSE. The test load or vehicle will be driven over the washboard course at a speed that produces the most violent response in the vertical direction.

C. OCEAN-GOING VESSEL TEST. Shipboard Transportation Simulator (Test Method 5). The Shipboard Transportation Simulator (STS) is used for testing loads in 8-foot-wide by 20-foot-long intermodal freight containers. The specimen shall be positioned onto the STS and securely locked in place using the cam lock at each corner. Using the procedure detailed in the operating instructions, the STS shall begin oscillating at an angle of 30 degrees, plus or minus 2 degrees, either side of vertical center and a frequency of 2 cycles-per-

minute (30 seconds, plus or minus 2 seconds) for a duration of two (2) hours. This frequency shall be observed for apparent defects that could cause a safety hazard. The frequency of oscillation shall then be increased to 4 cycles-per-minute (15 seconds, plus or minus one second per cycle) and the apparatus operated for two (2) hours. If an inspection of the load does not indicate an impending failure, the frequency of oscillation shall be further increased to 5 cycles-per-minute (12 seconds, plus or minus one second per cycle), and the apparatus operated for four (4) hours. The operation does not necessarily have to be continuous; however, no changes or adjustments to the load or load restraints shall be permitted at any time during the test. After once being set in place, the test load (specimen) shall not be removed from the apparatus until the test has been completed or is terminated.

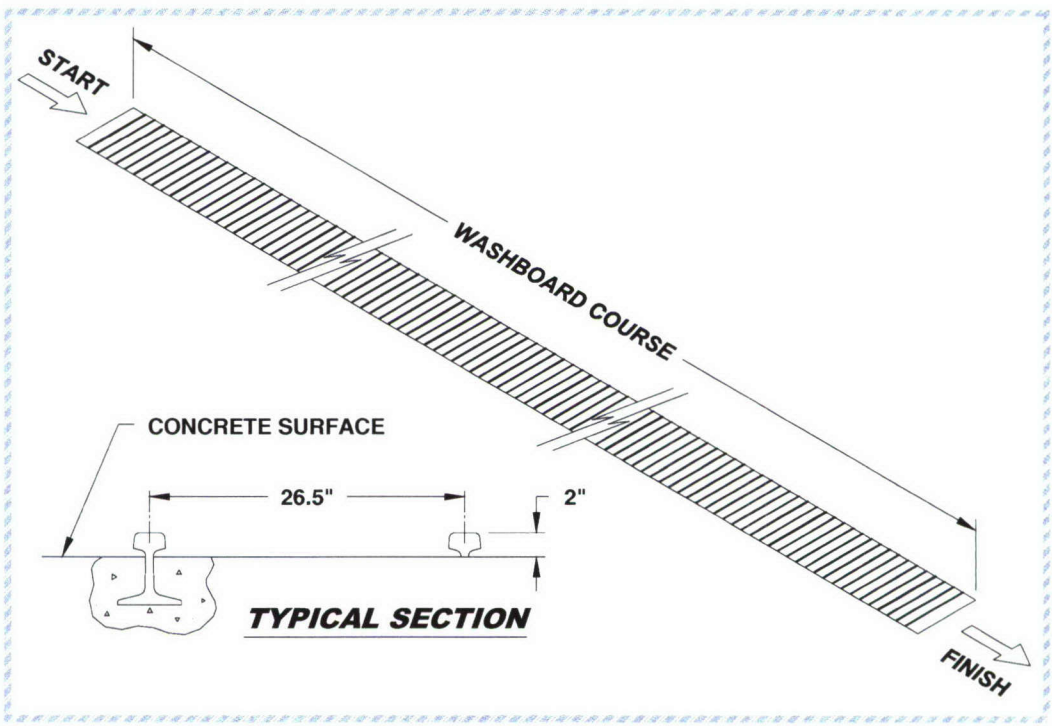


Figure 3. Washboard Course Sketch

PART 5 - TEST RESULTS

5.1

Test Specimen: SEA BOX Joint Modular Intermodal Platform Unit #4

Payload: 8 Navy Joint Modular Intermodal Containers (JMICs).

Payload Configuration: Double Stack on each End

Testing Date: 25-26 April 2007

Gross Weight: 21, 895 lbs (Including JMIP and JMICs).

A. RAIL TEST.

Photo 1. Rail Impact Testing of the JMIP (Prior to Testing)

Description	Weight
Flatcar Number: DODX 42353	85,000 lbs.
8 JMICs with JMIP	21,895 lbs.
M1 Flatrack with MLRS Pods	28,265 lbs.
Total Specimen Wt.	135,160 lbs.
Buffer Car (four cars)	257,900 lbs.

Figure 4.

Remarks: Figure 4 lists the test components and weights of the items used during the Rail Impact Tests.

Impact Number	Avg. Velocity (mph)
1	4.3
2	6.2
3	8.4
4	8.8

Figure 5.

Remarks:

1. Figure 5 lists the average speeds of the specimen car immediately prior to impact with the anvil. Impact #4 is the reverse impact.
2. The JMIP was secured directly to the railcar for testing.

B. ON/OFF ROAD TESTS.

1. HAZARD COURSE.

Photo 2. Hazard Course Testing of the JMIP

Pass No.	Elapsed Time	Avg. Velocity (mph)
1	27 Seconds	6
2	27 Seconds	6

Figure 6.

Remarks:

1. Figure 6 lists the average speeds of the test load through the Hazard Course.
2. The JMIP was transported on the PLS trailer.
3. The JMIP had to be craned onto the PLS trailer. The JMIP, as currently designed, cannot be rolled back on the PLS trailer using the vehicle load handling system due to the outward location of the rollers. The outward roller location prevents the JMIP from staying properly aligned when rolled back onto the PLS trailer. Additionally, the top JMICs had to be removed to prevent interference with the slings when loading/unloading the JMIP from the trailer.
4. Inspection did not reveal any damage to the JMIP.

Photo 3. Loading the JMIP onto the PLS Trailer

2. **ROAD TRIP:**

Remarks:

1. The Road Trip was conducted between the Hazard Course Passes #2 and #3.
2. Inspection following the Road Trip revealed no damage or movement of the JMIP.

3. **PANIC STOPS:** Testing was not required since the load was rail impact tested.

4. **HAZARD COURSE:**

Pass No.	Elapsed Time	Avg. Velocity (mph)
3	32 Seconds	5
4	30 Seconds	5

Figure 7.

Remarks:

1. Figure 7 lists the average speeds of the test load through the Hazard Course.
2. Inspection did not reveal any damage to the JMIP.

5. **WASHBOARD COURSE:**

Remarks: Inspection following the Washboard Course revealed no damage to the JMIP.

Photo 4. Washboard Course Testing of the JMIP

C. OBSERVATIONS:

1. Throughout testing the JMIP moved forward and aft on the PLS trailer due to the JMIP not properly engaging the trailer stops.

2. Following the completion of the testing, the JMIP was difficult to disengage from the PLS trailer. The JMIP had to be manipulated so that the trailer DIN locks would disengage the JMIP DIN locks.

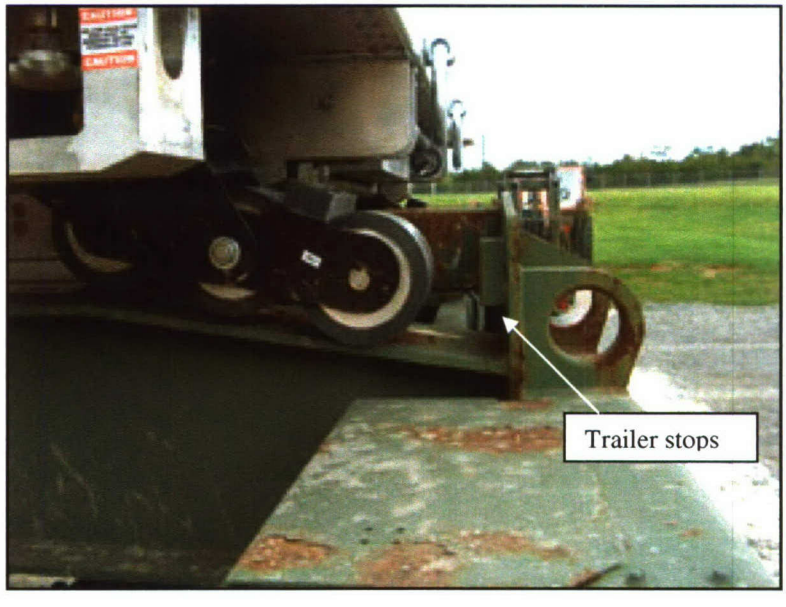


Photo 5. Rollers Not Engaging Trailer Stops

D. ON/OFF ROAD TESTS.

1. HAZARD COURSE.

Photo 6. Hazard Course Testing of the JMIP

Pass No.	Elapsed Time	Avg. Velocity (mph)
1	24 Seconds	6
2	24 Seconds	6

Figure 8.

Remarks:

1. Figure 8 lists the average speeds of the test load through the Hazard Course.
2. The JMIP was secured directly to the M872 trailer.
3. Inspection did not reveal any damage to the JMIP.

2. **ROAD TRIP:**

Remarks:

1. The Road Trip was conducted between the Hazard Course Passes #2 and #3.
2. Inspection following the Road Trip revealed no damage or movement of the JMIP.

3. **PANIC STOPS:** Testing was not required since the load was rail impact tested.

4. **HAZARD COURSE:**

Pass No.	Elapsed Time	Avg. Velocity (mph)
3	25 Seconds	6
4	25 Seconds	6

Figure 9.

Remarks:

1. Figure 9 lists the average speeds of the test load through the Hazard Course.
2. Inspection did not reveal any damage to the JMIP.

5. **WASHBOARD COURSE:**

Remarks: Inspection following the Washboard Course revealed no damage to the JMIP.

Photo 7. Washboard Course Testing of the JMIP

E. CONCLUSIONS:

1. The JMIP, as currently designed, is adequate to transport the double-stacked JMICs for demonstration purposes.

2. The operational condition of the JMIP should be closely monitored during the demonstration. Also, the Defense Ammunition Center, Transportation Engineering Division, shall be consulted for the ammunition and loading instructions.

3. The JMIP, as currently designed, is **not adequate** to be used on the PLS trailer.

5.2

Test Specimen: SEABOX Joint Modular Intermodal Platform Unit #4

Payload: 8 Navy Joint Modular Intermodal Containers (JMIC).

Payload Configuration: Alternating Double Stack

Testing Date: 20 April 2007

Gross Weight: 26, 085 lbs (Including JMIP and JMICs).

A. ON/OFF ROAD TESTS.

1. HAZARD COURSE.

Photo 8. Hazard Course Testing of the JMIP

Pass No.	Elapsed Time	Avg. Velocity (mph)
1	24 Seconds	6
2	25 Seconds	6

Figure 10.

Remarks:

1. Figure 10 lists the average speeds of the test load through the Hazard Course.
2. The JMIP was secured directly to the M872 trailer.
3. Inspection did not reveal any damage to the JMIP.

2. **ROAD TRIP:**

Remarks:

1. The Road Trip was conducted between the Hazard Course Passes #2 and #3.
2. Inspection following the Road Trip revealed no damage or movement of the JMIP.

3. **PANIC STOPS:** Testing was not required since the load was rail impact tested.

4. **HAZARD COURSE:**

Pass No.	Elapsed Time	Avg. Velocity (mph)
3	24 Seconds	6
4	24 Seconds	6

Figure 11.

Remarks:

1. Figure 11 lists the average speeds of the test load through the Hazard Course.
2. Inspection did not reveal any damage to the JMIP.

5. **WASHBOARD COURSE:**

Remarks: Inspection following the Washboard Course revealed no damage to the JMIP.

Photo 9. Washboard Course Testing of the JMIP

B. ON/OFF ROAD TESTS.

1. HAZARD COURSE.

Photo 10. Hazard Course Testing of the JMIP

Pass No.	Elapsed Time	Avg. Velocity (mph)
1	24 Seconds	6
2	21 Seconds	7

Figure 12.

Remarks:

1. Figure 12 lists the average speeds of the test load through the Hazard Course.
2. The JMIP was transported on the PLS truck.
3. The main JMIP rail on the driver's side front dropped down 0.38 inches.
4. The bottom plate on the JMIP rail deformed when contacting the PLS roller. See Photo 12 for deformation and Photo 17 on related delaminating damage.

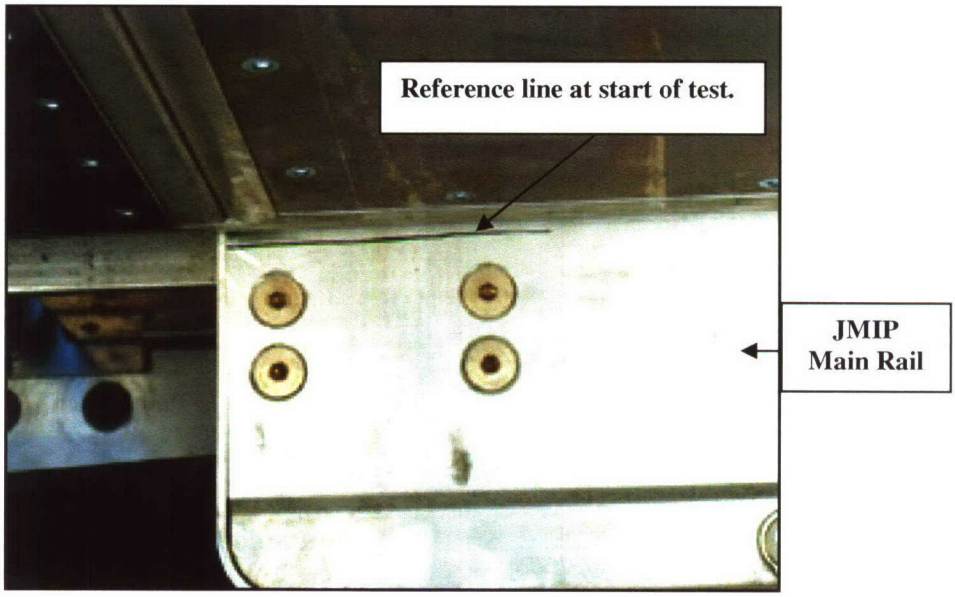


Photo 11. Movement of JMIP Main Rail

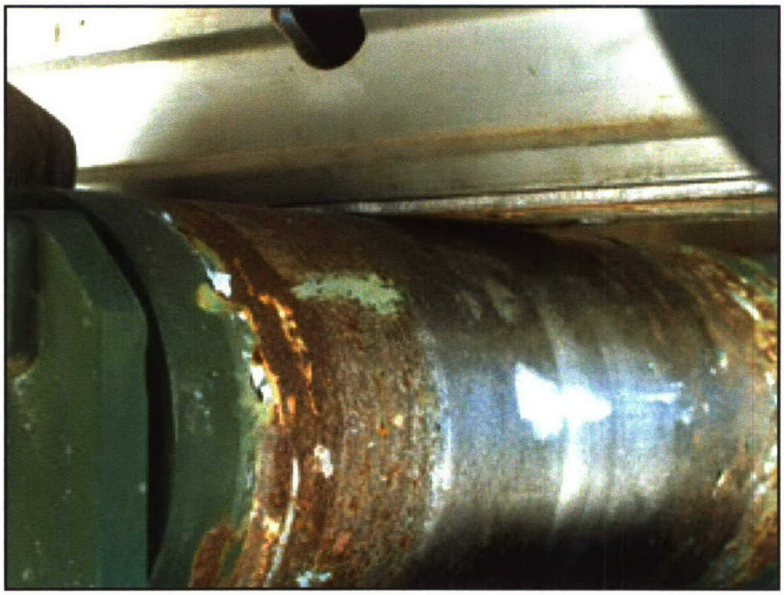


Photo 12. Deformation of Main Rail Plate

2. **ROAD TRIP:**

Remarks:

1. The Road Trip was conducted between the Hazard Course Passes #2 and #3.
2. Inspection following the Road Trip revealed no damage or movement of the JMIP.

3. **PANIC STOPS:** Testing was not required since the load was rail impact tested.

4. **HAZARD COURSE:**

Pass No.	Elapsed Time	Avg. Velocity (mph)
3	21 Seconds	7
4	18 Seconds	8

Figure 13.

Remarks:

1. Figure 13 lists the average speeds of the test load through the Hazard Course.
2. Inspection following the completion of Pass #4 revealed that the JMIP main rails were slanted and no longer centered in the channels.
3. Inspection following the completion of Pass #4 revealed that the JMIP main rail on the passenger side had moved back.

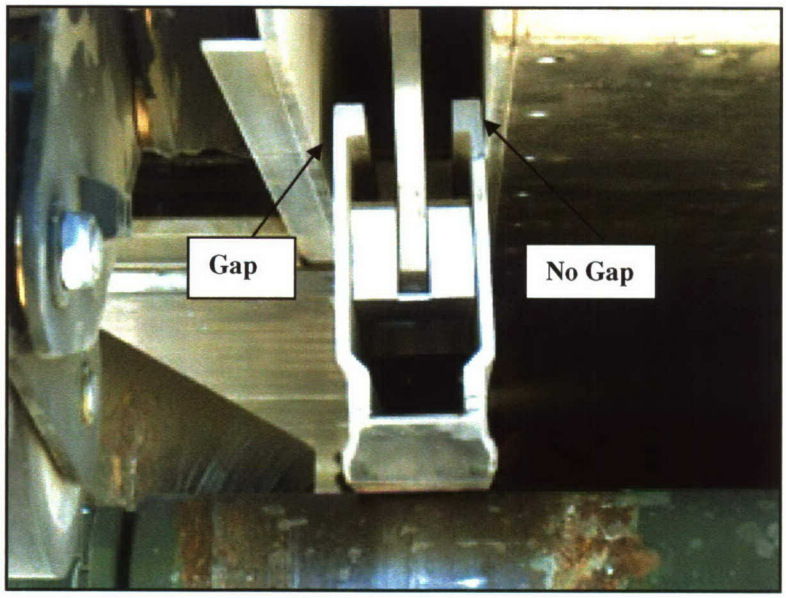


Photo 13. Main Rail No Longer Centered

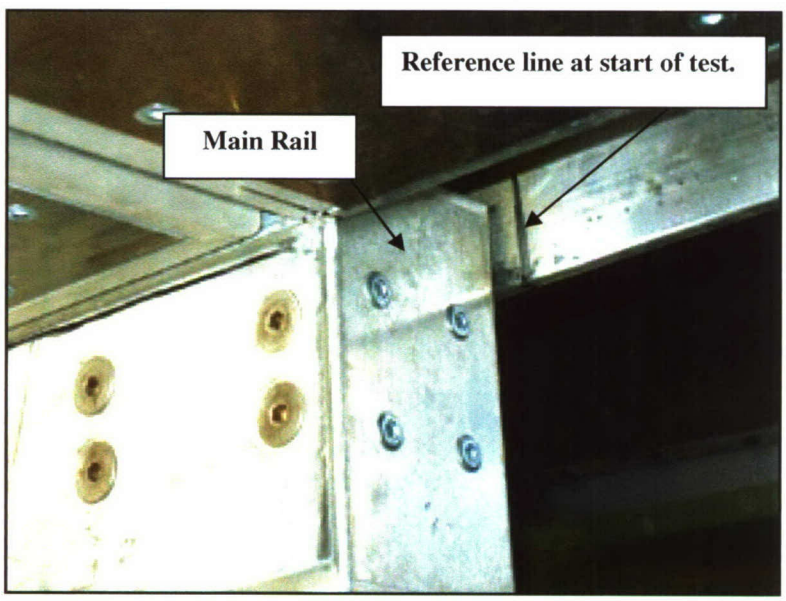


Photo 14. Backward Movement of Main Rail

5. **WASHBOARD COURSE:**

Remarks: Inspection following the Washboard Course revealed no damage to the JMIP.

Photo 15. Washboard Course Testing of the JMIP

C. OBSERVATIONS:

1. One (1) handle of the A-Frame PLS position transport pin partially opened. This was most likely caused by the locking nuts moving. The pin remained safely engaged.

2. The bottom plate on the main rail was delaminating when loaded onto/off the PLS truck.

3. One (1) JMIC locking pin on one (1) side panel had disengaged. The load was still safely secured and retained.

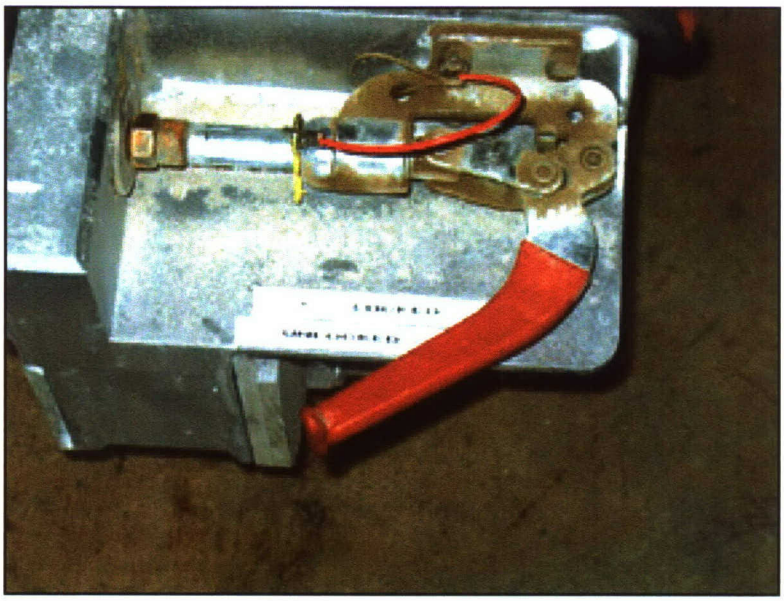


Photo 16. Partially Opened Handle

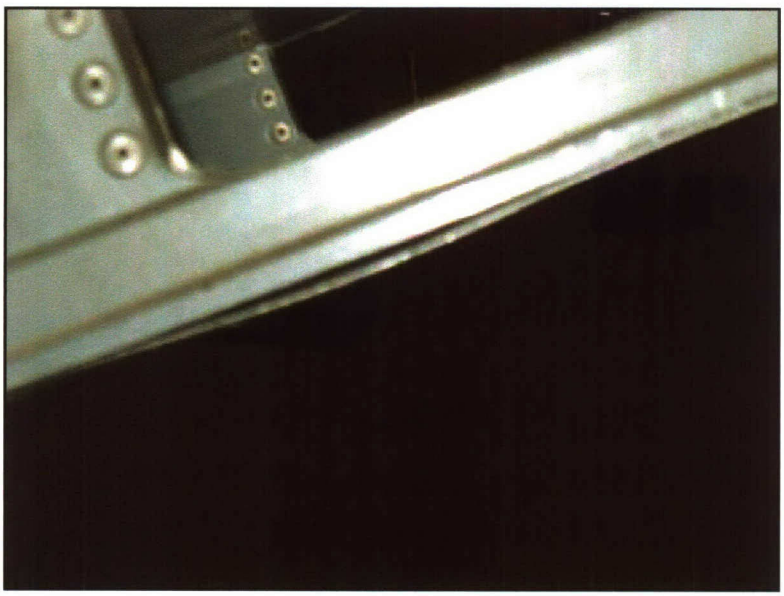


Photo 17. Delaminating Main Rail

Photo 18. Disengaged JMIC Locking Pin

D. CONCLUSIONS:

1. The JMIP, as currently designed, is adequate to transport the double-stacked JMICs for demonstration purposes.

2. The operational condition of the JMIP should be closely monitored during the demonstrations. Also, the Defense Ammunition Center, Transportation Engineering Division, shall be contacted for the ammunition and loading instructions.

PART 6 – DRAWINGS

The following drawing represents the load configuration that was subjected to the test criteria.

TEST SKETCH

LOADING AND BRACING OF JOINT MODULAR INTERMODAL CONTAINERS (JMICS) ON THE JOINT MODULAR INTERMODAL PLATFORM (JMIP)

THIS TEN PAGE DOCUMENT DEPICTS NAVY JMIC ON A SEABOX JMIP FOR TRANSPORTABILITY TESTING THE WORST CASE STACKING CONFIGURATIONS FOR RAIL IMPACT AND ON/OFF ROAD TESTING

PREPARED DURING APRIL 2007 BY:
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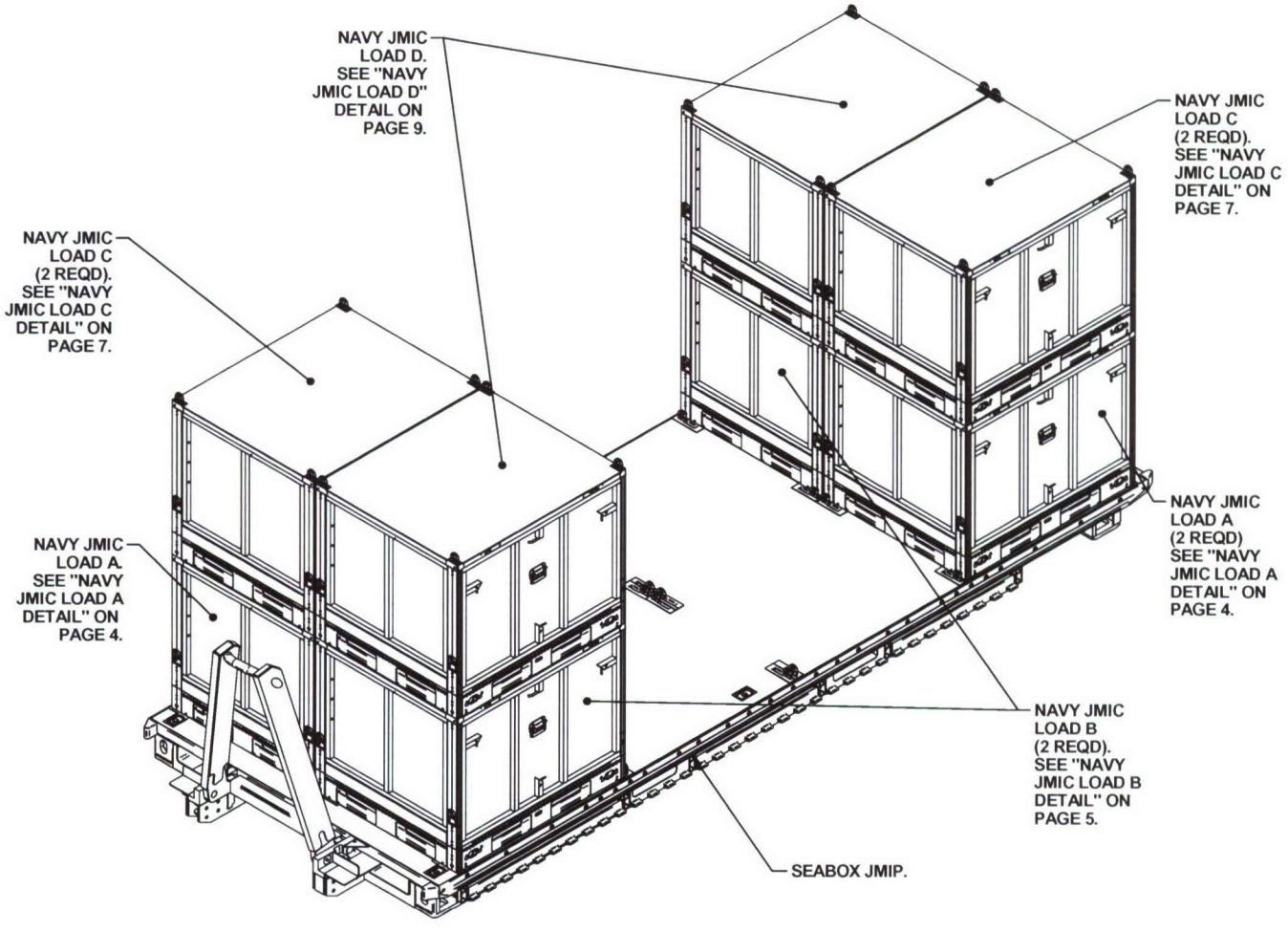


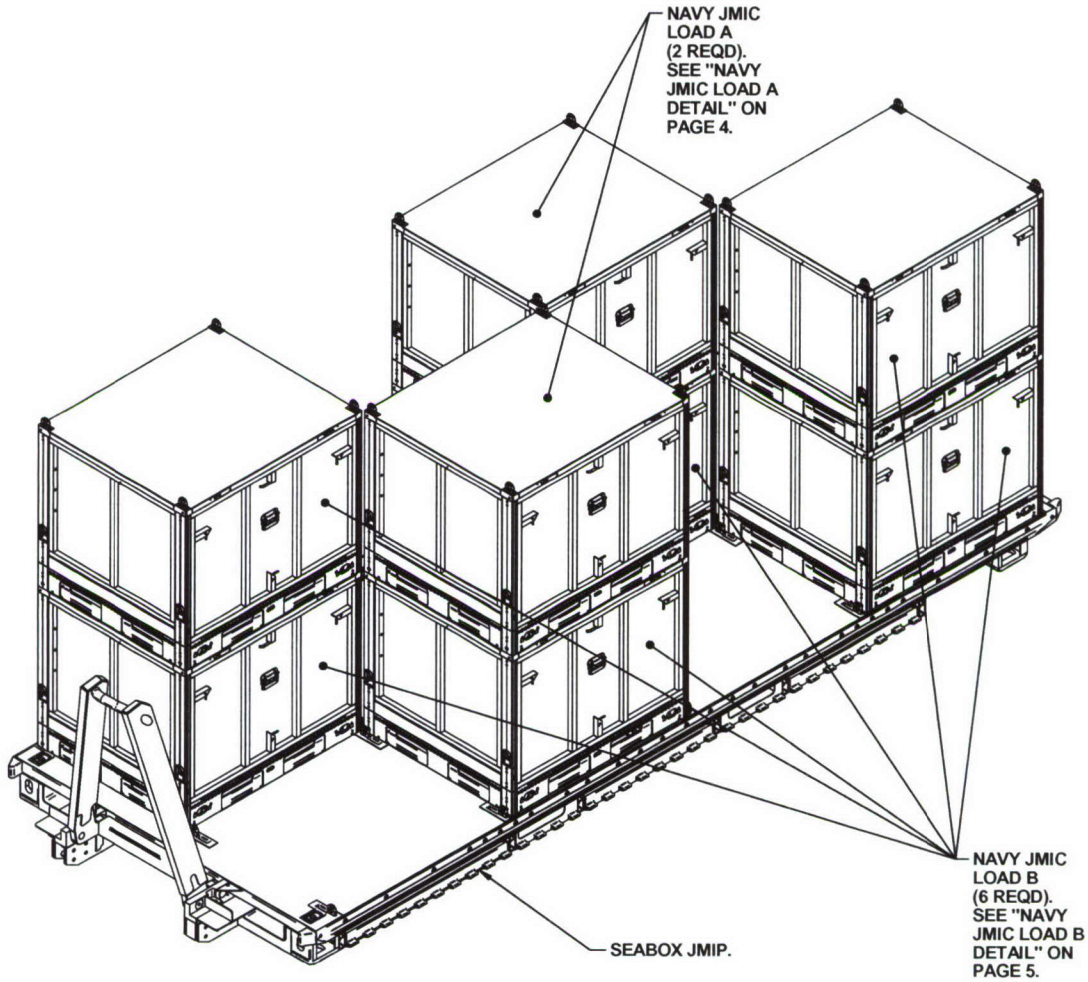
ISOMETRIC VIEW

NOTE: BASED ON PULL TEST DATA ON JMIC SECUREMENT RINGS, ARDEC HAS PERFORMED AND ANALYSIS THAT DETERMINED THE MAXIMUM STACKED LOAD ON THE REAR POSITION OF THE JMIP ONLY BE IN COMBINATIONS OF 2,000 LBS - 2,000 LBS OR 3,000 LBS - 1,600 LBS LOAD JMICS

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
NAVY JMIC LOAD A	2	4,022 LBS
NAVY JMIC LOAD B	2	5,942 LBS
NAVY JMIC LOAD C	2	3,908 LBS
NAVY JMIC LOAD D	2	3,192 LBS
JMIP		4,240 LBS
TOTAL WEIGHT		21,304 LBS (APPROX)

8 JMIC LOAD ON JOINT MODULAR INTERMODAL PLATFORM (JMIP) FOR RAIL IMPACT TEST

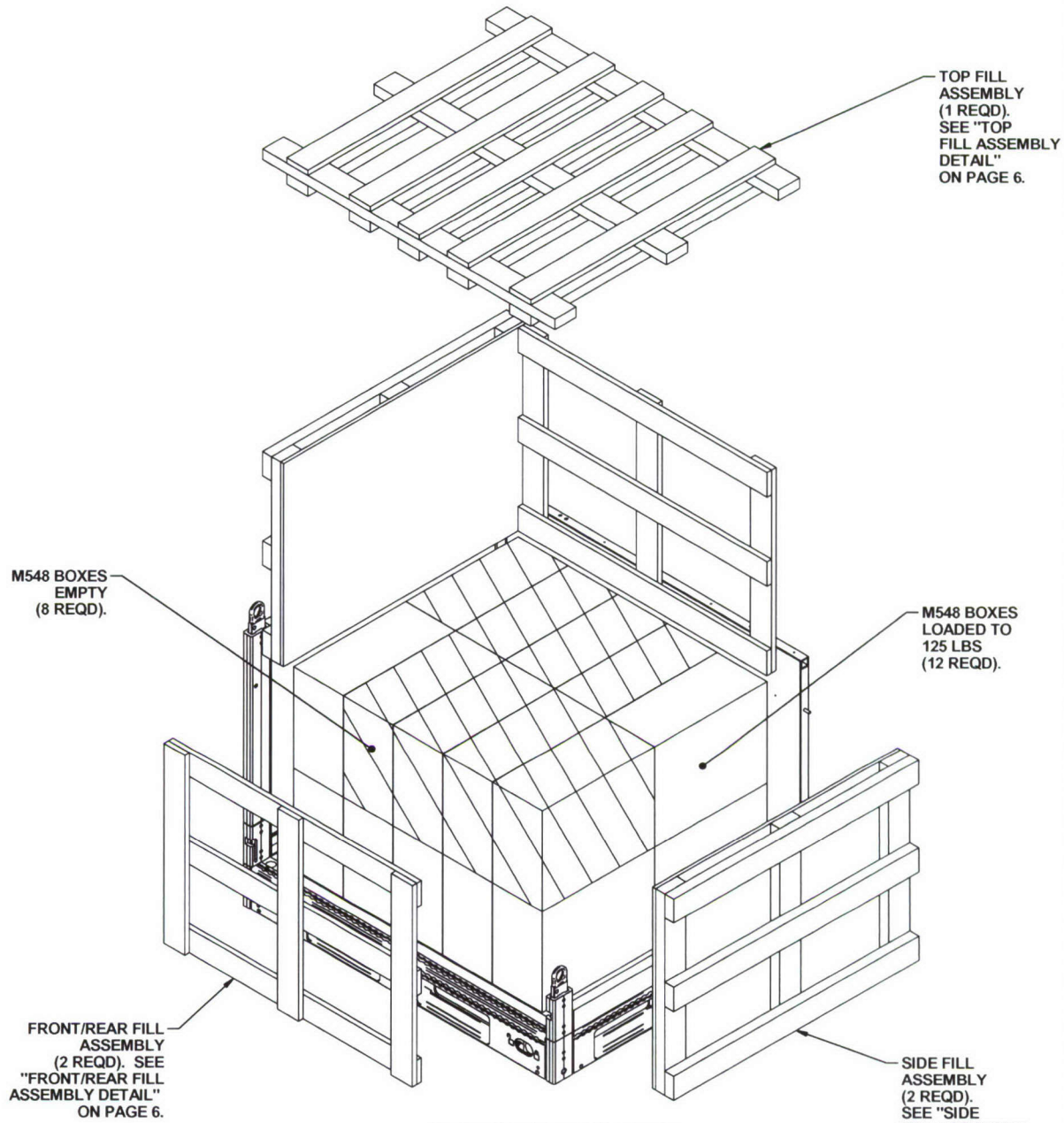


ISOMETRIC VIEW

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
NAVY JMIC LOAD A	2	4,022 LBS
NAVY JMIC LOAD B	6	17,826 LBS
JMIP		4,240 LBS
	TOTAL WEIGHT	26,088 LBS (APPROX)

8 JMIC LOAD ON JOINT MODULAR INTERMODAL PLATFORM (JMIP) FOR ON/OFF ROAD TEST

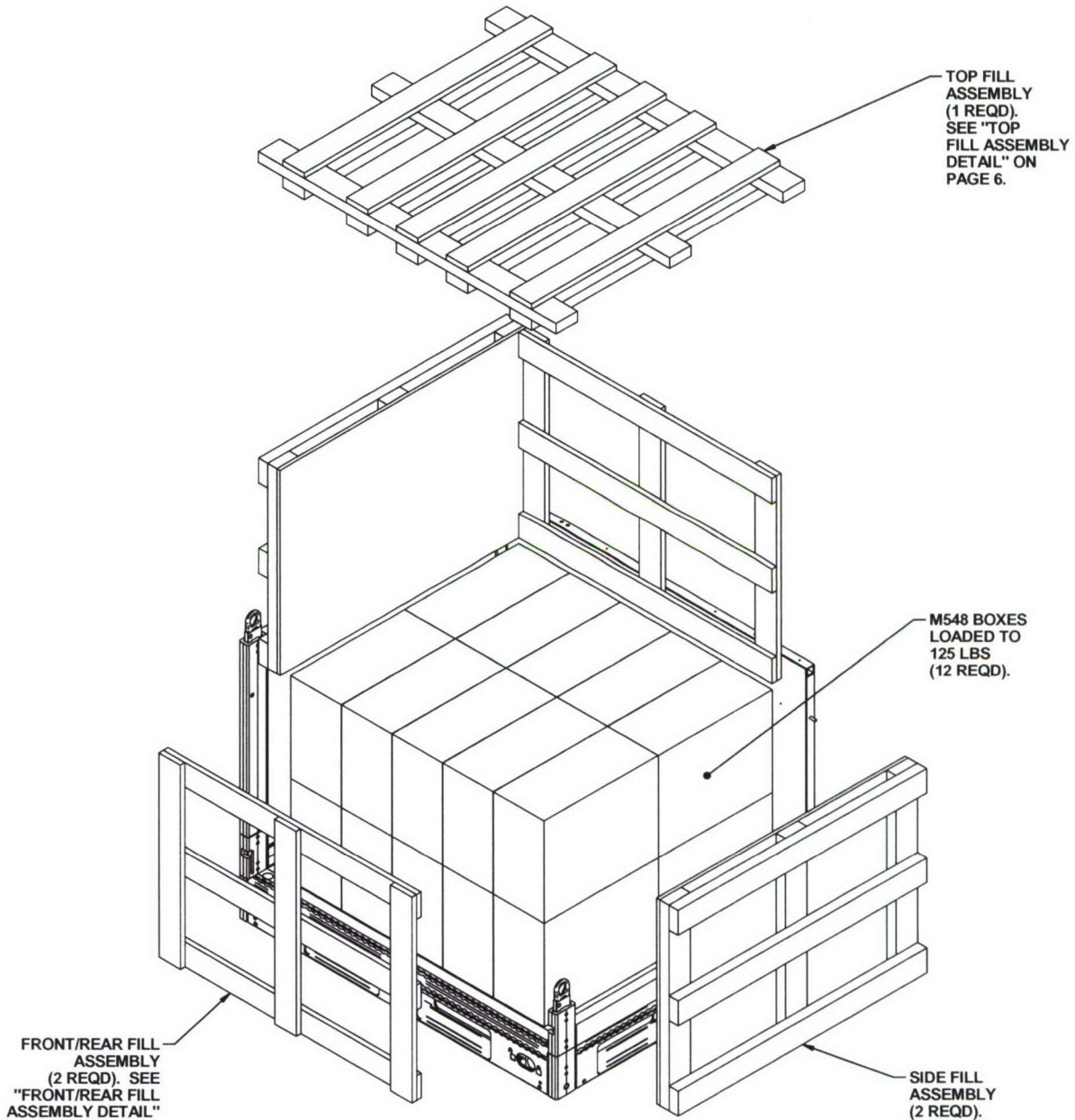


NAVY JMIC UNIT LOAD A
(2 REQD FOR RAIL IMPACT)
(2 REQD FOR ON/OFF ROAD TEST)

12 M548 BOXES @ 125 LBS	1,500 LBS
8 M548 BOXES (EMPTY) @ 5 LBS	40 LBS
DUNNAGE	146 LBS
CLOSED PANEL NAVY JMIC	325 LBS
TOTAL WEIGHT	2,011 LBS (APPROX)
CUBE	56.4 CU FT (APPROX)

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	52	18
2" X 4"	64	43
NAILS	**NO. REQD**	**POUNDS**
3d (1-1/4")	84	.16
6d (2")	60	.35
10d (3")	36	.54
NAVY PANEL JMIC	1 REQD	325 LBS
1/2 PLYWOOD	17 SQ FT	23 LBS

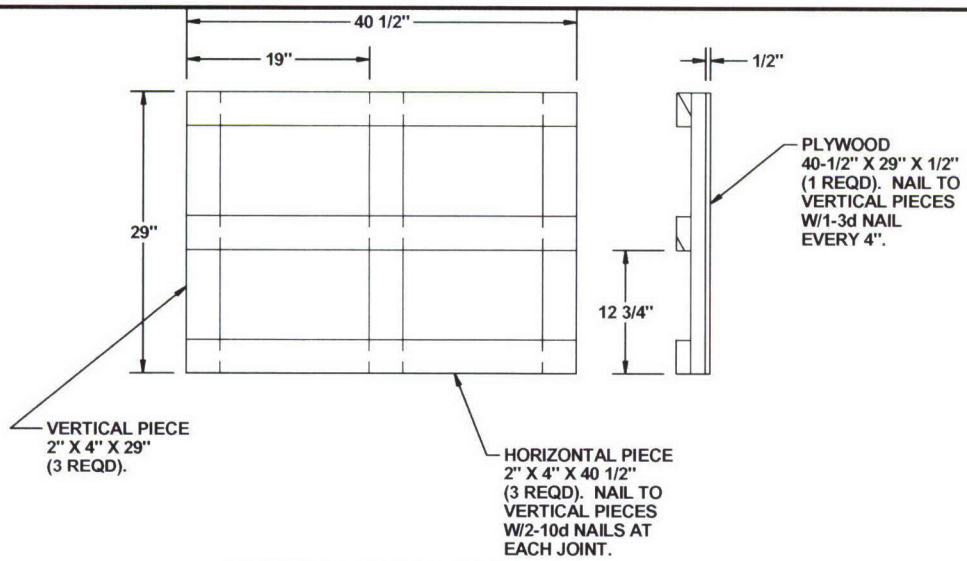


NAVY JMIC UNIT LOAD B
(2 REQD FOR RAIL IMPACT)
(6 REQD FOR ON/OFF ROAD TEST)

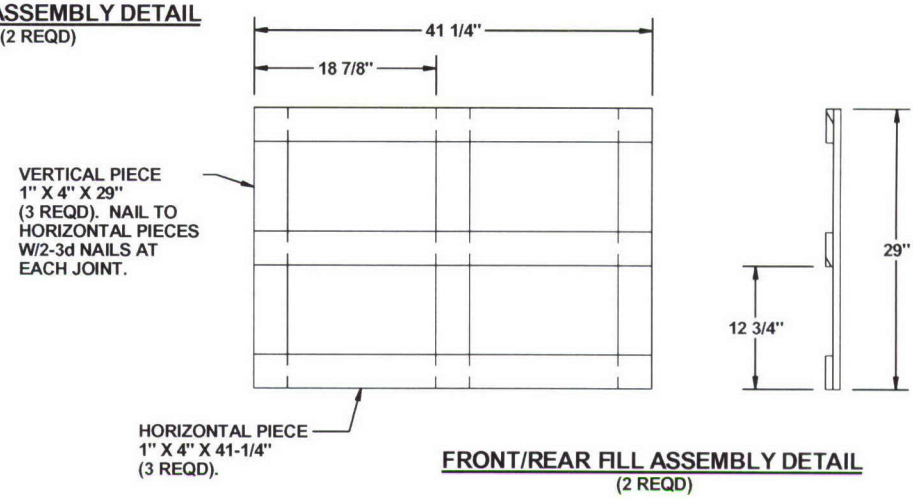
20 M548 BOXES @ 125 LBS	2,500 LBS
DUNNAGE	146 LBS
CLOSED PANEL NAVY JMIC	325 LBS
TOTAL WEIGHT	2,971 LBS (APPROX)
CUBE	56.4 CU FT (APPROX)

BILL OF MATERIAL

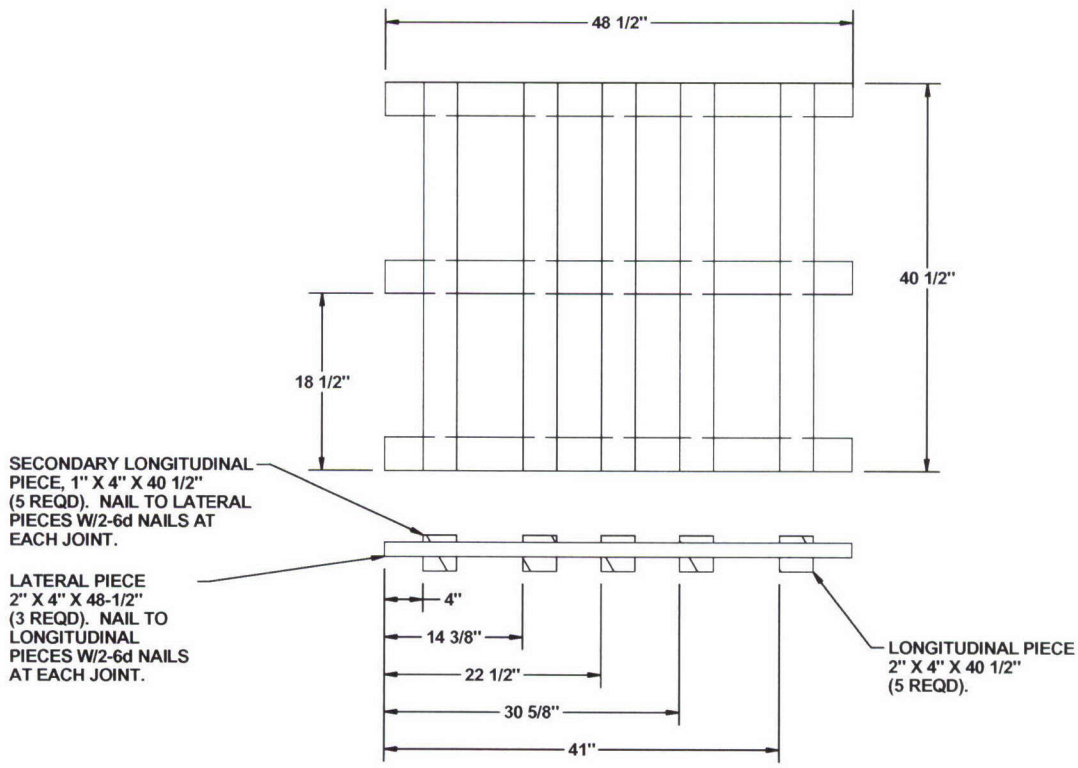
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	52	18
2" X 4"	64	43
NAILS	**NO. REQD**	**POUNDS**
3d (1-1/4")	84	.16
6d (2")	60	.35
10d (3")	36	.54
NAVY PANEL JMIC	1 REQD	325 LBS
1/2 PLYWOOD	17 SQ FT	23 LBS



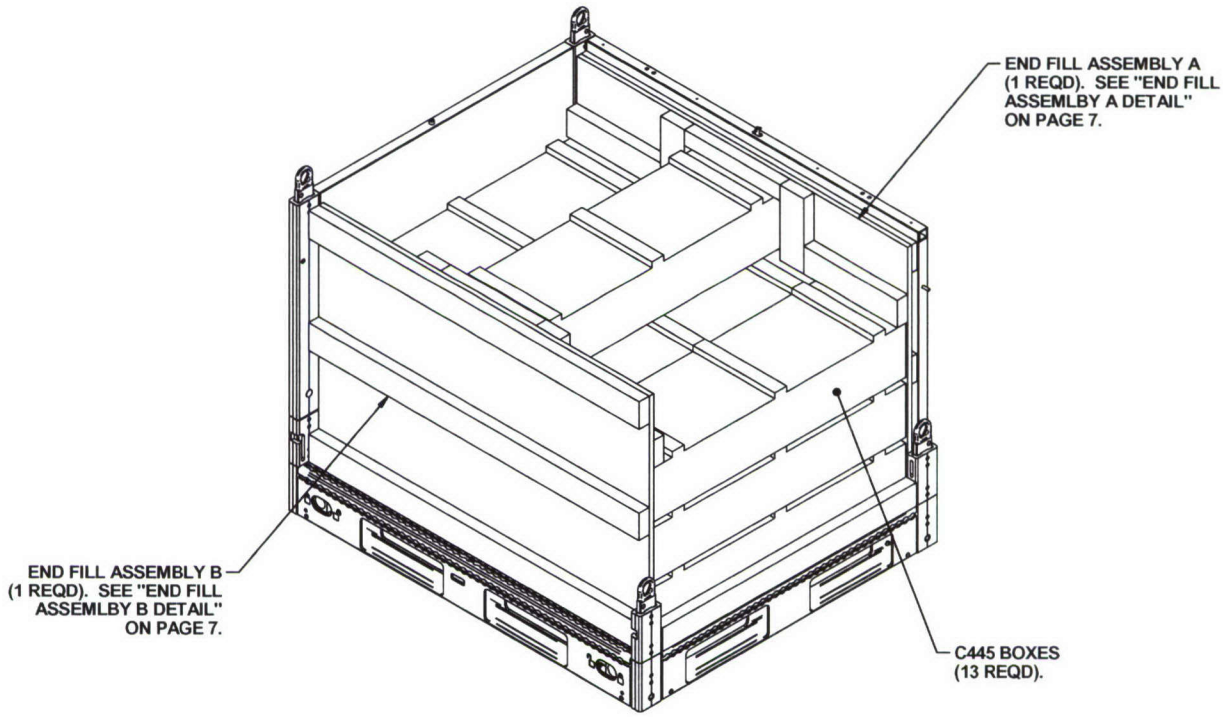
SIDE FILL ASSEMBLY DETAIL
(2 REQD)



FRONT/REAR FILL ASSEMBLY DETAIL
(2 REQD)



TOP FILL ASSEMBLY DETAIL
(1 REQD)



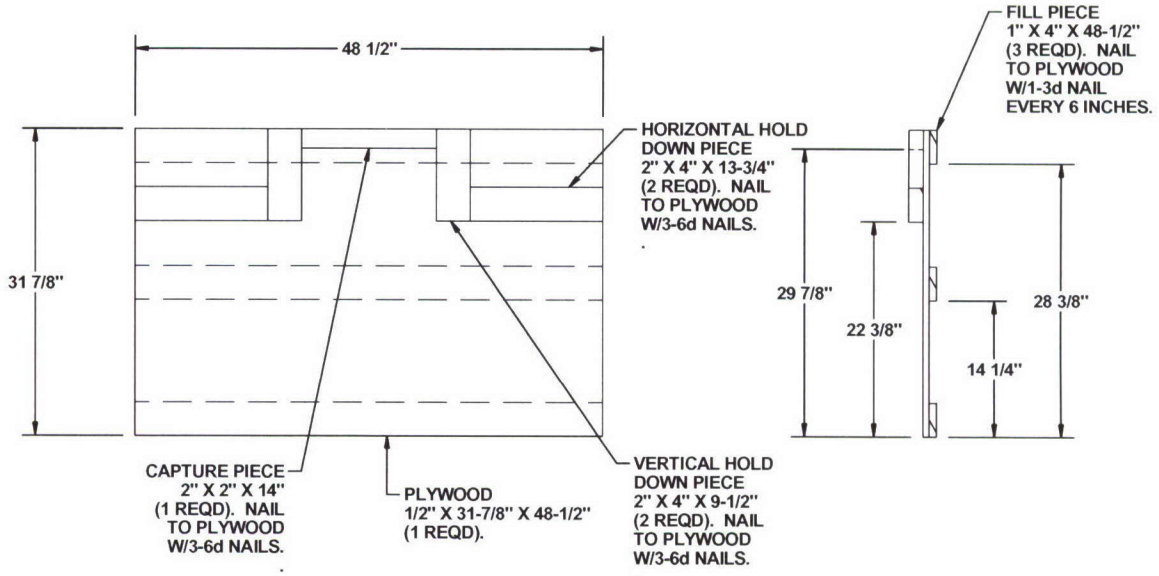
NAVY JMIC UNIT LOAD C

(2 REQD FOR RAIL IMPACT TEST)
(NONE REQD FOR ON/OFF ROAD TEST)

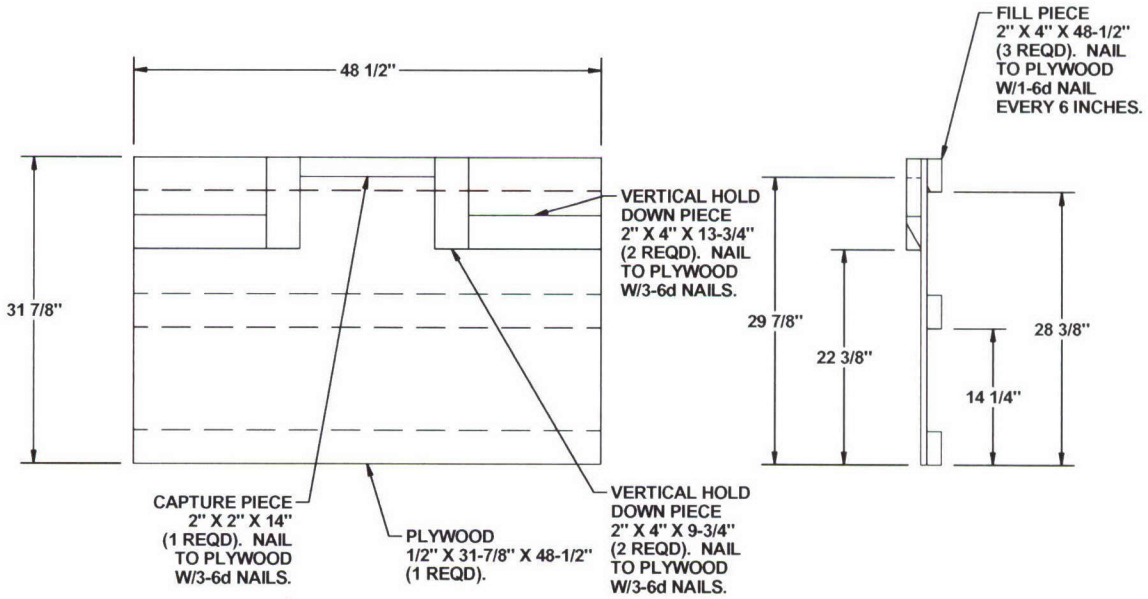
13 C445 BOXES @ 120 LBS	1,560 LBS
DUNNAGE	69 LBS
CLOSED PANEL NAVY JMIC	325 LBS
TOTAL WEIGHT	1,954 LBS (APPROX)
CUBE	56.4 CU FT (APPROX)

BILL OF MATERIAL

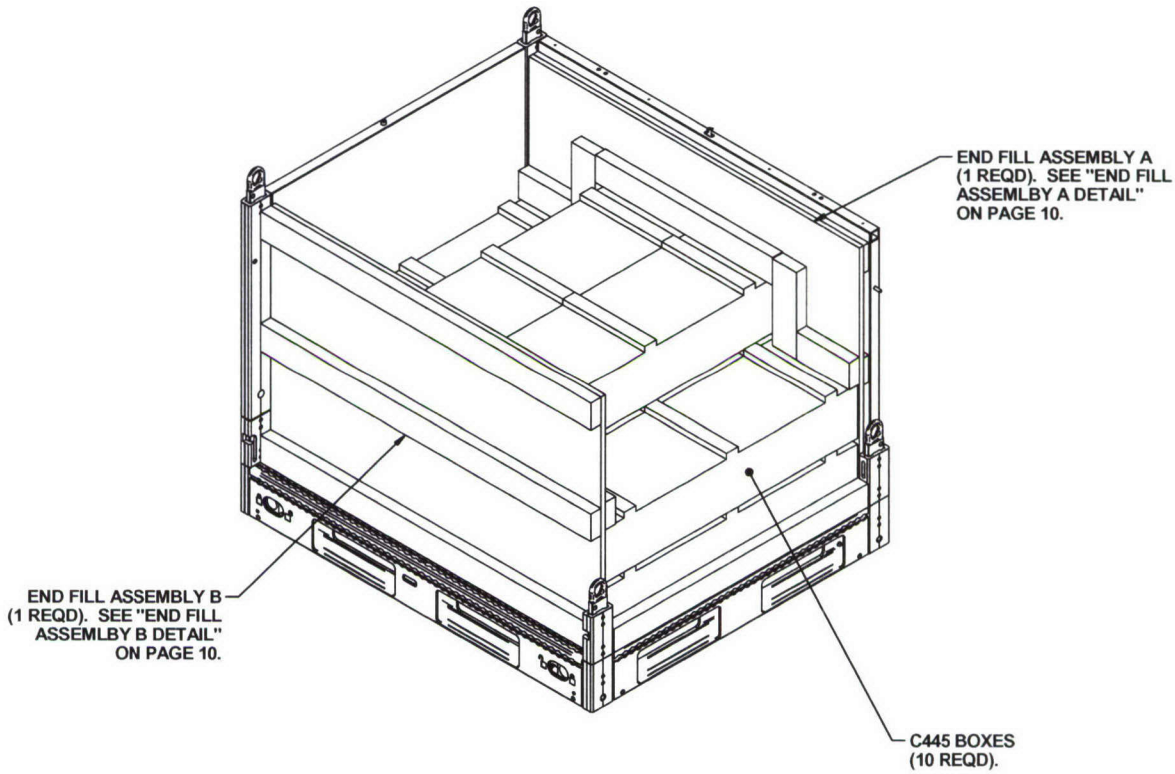
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	12	4
2" X 4"	22	15
NAILS	**NO. REQD**	**POUNDS**
3d (1-1/4")	24	.05
6d (2")	48	.28
NAVY PANEL JMIC	1 REQD	325 LBS
1/2 PLYWOOD	22 SQ FT	30 LBS



END FILL ASSEMBLY A DETAIL
(1 REQD)



END FILL ASSEMBLY B DETAIL
(1 REQD)

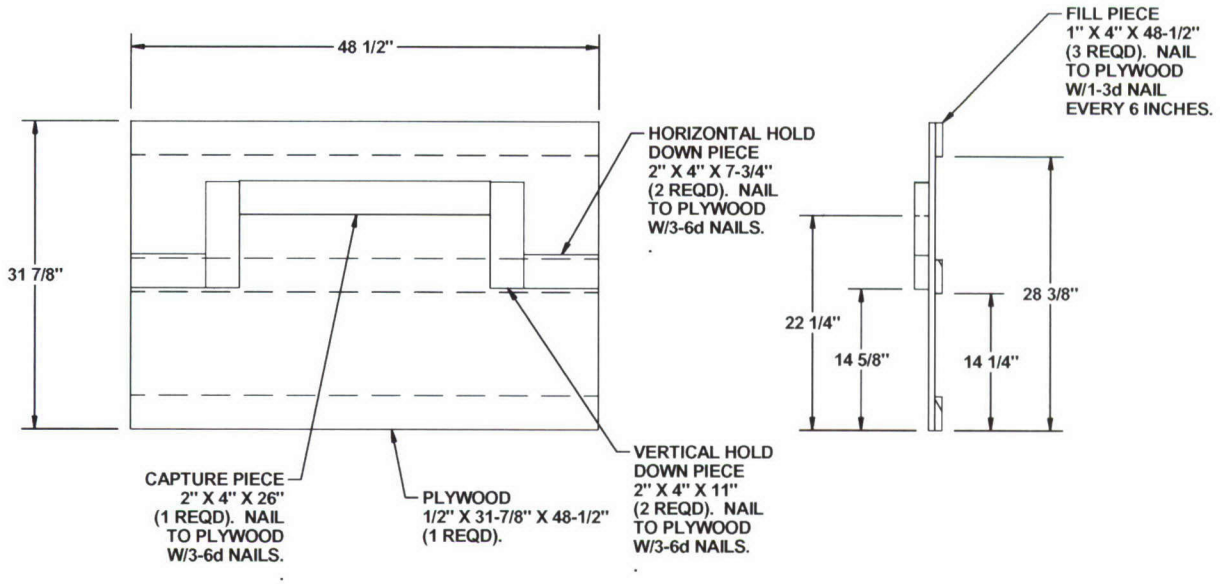


NAVY JMIC UNIT LOAD D

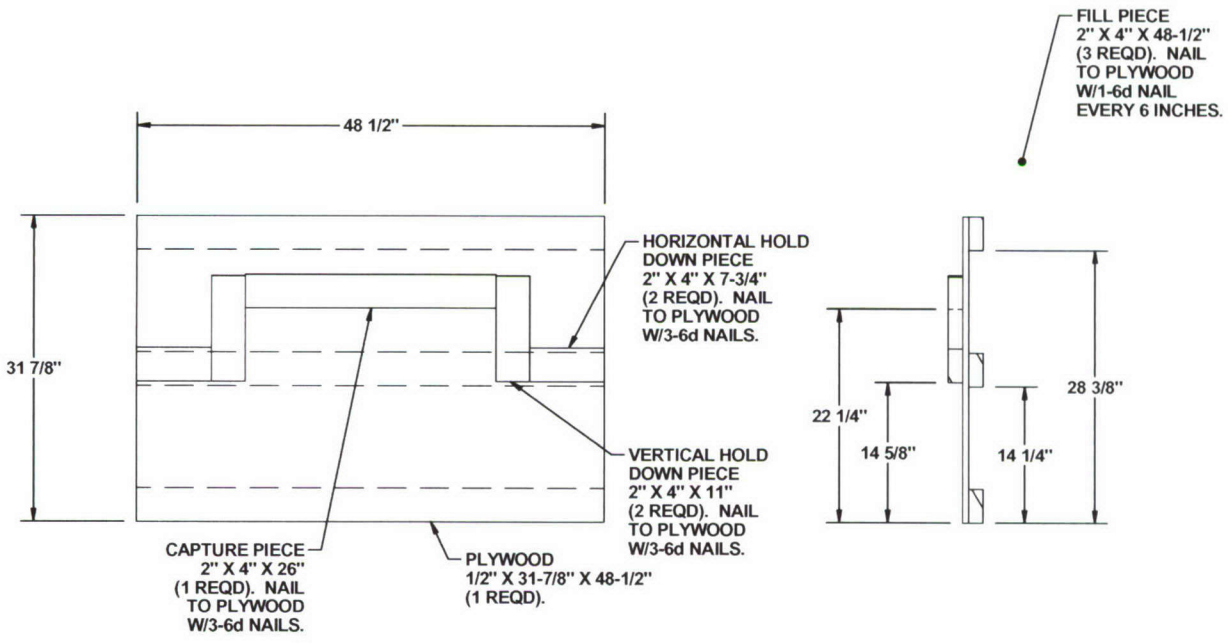
(2 REQD FOR RAIL IMPACT)
(NONE REQD FOR ON/OFF ROAD TEST)

10 C445 BOXES @ 120 LBS	1,200 LBS
DUNNAGE	71 LBS
CLOSED PANEL NAVY JMIC	325 LBS
TOTAL WEIGHT	1,596 LBS (APPROX)
CUBE	56.4 CU FT (APPROX)

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	12	4
2" X 4"	23	16
NAILS	NO. REQD	POUNDS
3d (1-1/4")	24	.05
6d (2")	48	.28
NAVY PANEL JMIC	1 REQD	325 LBS
1/2 PLYWOOD	22 SQ FT	30 LBS



END FILL ASSEMBLY A DETAIL
(1 REQD)



END FILL ASSEMBLY B DETAIL
(1 REQD)